



Description of the FRF Survey Data File

14 April 2011

This document describes the format used for survey data collected at the Field Research Facility (FRF) of the Corps of Engineers located in Duck, NC. This is one of several formats that have been used at the FRF since 1980 and it the most complete.

Important information is contained in the filename including:

1. **Survey Location:** Field Research Facility (FRF), Duck, NC
2. **Experiment (optional):** here "FRF" indicates that it is the long-term survey program at the FRF (1981-present)
3. **Survey date:** in Year, Month, Day format
4. **Survey number:** sequential since original survey
5. **Vertical datum of the data:** usually NAVD88, units are always meters
6. **Survey Vehicle:** the LARC or the CRAB
7. **Survey System used for the survey:** Mini-Ranger, Zeiss Elta2, Geodimeter 140T, or GPS

The fields are separated with underscores.

Example Filename: FRF_FRF_20101019_0729_NAVD88_LARC_GPS.csv

Not included in the filename is the horizontal coordinate system used, always NAD83 nor the units of the data which is always in meters.

The data are in a comma separated format without a header record. Three coordinate systems are included - geographic, state plane, and a local coordinate system known as the "*FRF coordinate system*." The FRF coordinate system is an orthogonal system which aligns with the orientation of the FRF pier. The origin is located behind the dune near the south boundary of the FRF property. A map of the survey line locations and numbers is shown below in Figure 1.

A few sample data lines are listed below:

```
39,165,732,36.182258566,-75.750298167,901879.708,274608.283,108.669,508.670,0.380,-38.488,20110318,122547,44747.137
39,165,732,36.182257718,-75.750291753,901880.288,274608.208,109.188,508.401,0.336,-38.532,20110318,122548,44748.137
39,165,732,36.182256839,-75.750280440,901881.308,274608.144,110.125,507.991,0.244,-38.624,20110318,122549,44749.137
39,165,732,36.182256695,-75.750265285,901882.671,274608.172,111.416,507.552,0.103,-38.765,20110318,122550,44750.137
```

The fields are:

1. **Locality** (character)
2. **Profile** (integer)
3. **Survey Number** (integer)
4. **Latitude** (decimal degrees)
5. **Longitude** (decimal degrees)
6. **State Plane Coordinate:** Northing(decimal meters)
7. **State Plane Coordinate:** Easting(decimal meters),
8. **FRF offshore coordinate:** Distance offshore from the FRF baseline, in meters
9. **FRF longshore coordinate:** Distance alongshore from the FRF origin, in meters
10. **Elevation:** Elevation of the point relative to the vertical datum in meters

11. **Ellipsoid Height:** Elevation of the point relative to World Geodetic System (WGS84) in meters
12. **Date:** date data point was collected (year, month, day)
13. **Time(hhmmss):** Time data point was collected - in Eastern Standard Time
14. **Time2(sec after midnight):** Time data point was collected in seconds past midnight, used for QA/QC

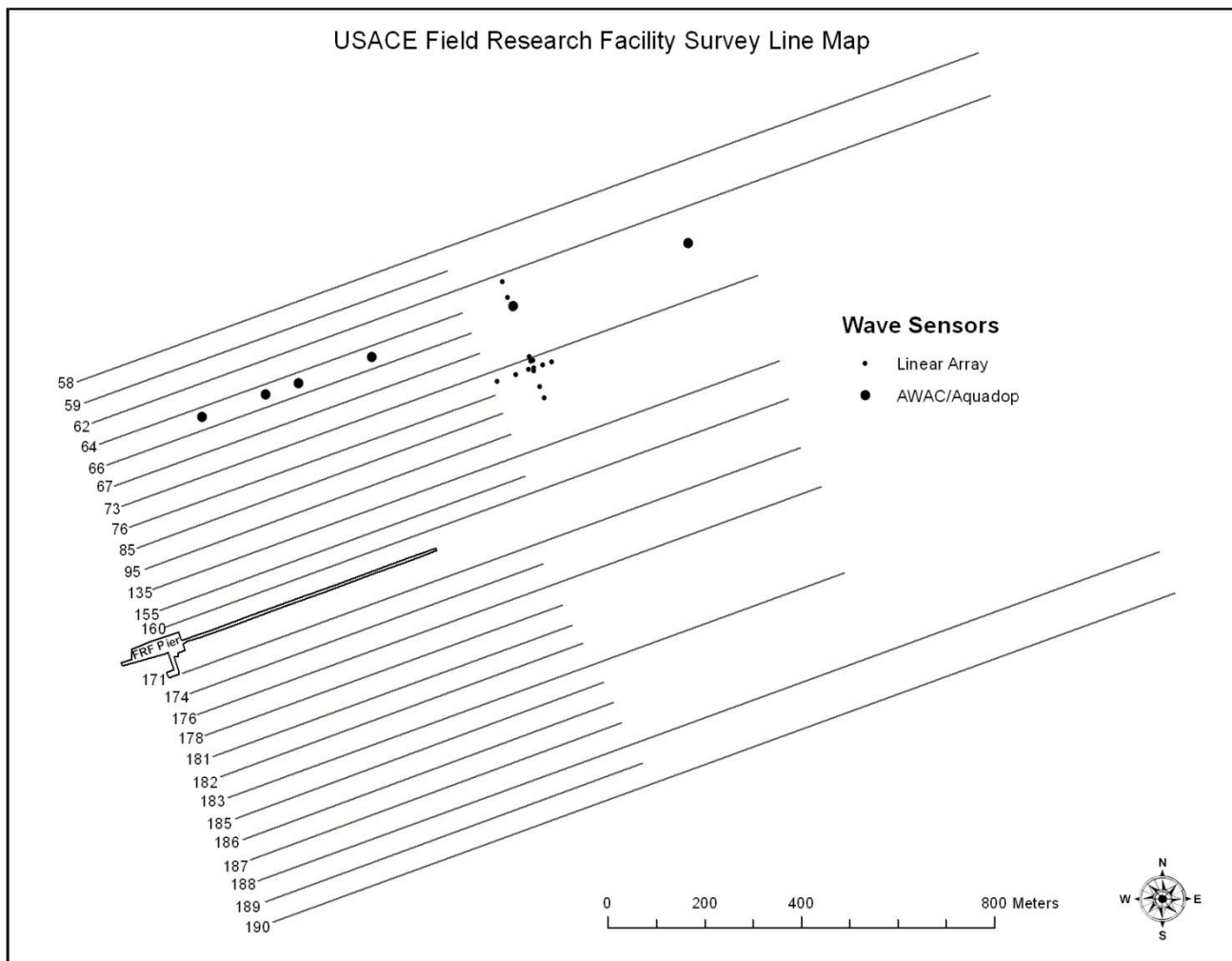


Figure 1. USACE Field Research Facility Survey Line Map

Below is a comma separated header line that could be pasted into the file in order to provide column headings:

Locality,Profile,SurveyNumber,Latitude,Longitude,Northing,Easting,FRF_offshore,FRF_longshore,Elevation,Ellipsoid,Date,Time1,time_sec

Vertical Datum

Early surveys at the FRF were done using the FRF coordinate system and were related to the National Geodetic Vertical Datum of 1929 (NGVD29). Modern surveys are collected relative to the North American Vertical Datum of 1988 (NAVD88) and most FRF data has been adjusted to NAVD88. To obtain NAVD88 data from NGVD29 data, subtract 0.29 m.

In meters: $Z_{\text{NGVD29}} - 0.29 = Z_{\text{NAVD88}}$

FRF coordinate System Origin

The geodetic and state plane location of the origin of the of the FRF coordinate system are:

Latitude = 36.177597325 decimal degrees (revised Nov 2010)

Longitude = -75.749685725

Baseline Grid Angle relative to True North = 18.1391 degrees

North Carolina State Plane coordinates in meters

Easting = 901951.70333

Northing = 274093.13928

Baseline Grid Angle relative to True North = 20.02 degrees

FRF Data Use Policy:

If you use FRF data, please honor the use policy. Data are intended for scholarly use by the research community, with the express agreement that users will properly acknowledge the USACE Field Research Facility and the supporting investigator(s). Use or reproduction of these data for commercial purposes is prohibited without prior written permission.

Data Acknowledgement Policy:

Full acknowledgement of observational and modeling data provided by the Field Research Facility provides an important metric to assess, and ultimately continue, our service to the coastal research community.

The following citation should be included in any use of these data:

Data are provided by the Field Research Facility, Field Data Collections and Analysis Branch, US Army Corps of Engineers, Duck, North Carolina.

Specific investigators and/or relevant research programs should also be acknowledged for their contributions.